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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/03/2005

Pascal Sulkowski

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09/26/2007

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EXAMINER

HOANG, JOHNNY H

ART UNIT

PAPER NUMBER

3747

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/551,824	Applicant(s) SULKOWSKI, PASCAL	
	Examiner Johnny H. Hoang	Art Unit 3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 1-9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/03/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because the form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. Correction is required. See MPEP § 608.01(b).

Information Disclosure Statement

3. The information disclosure statement filed October 03, 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Objections

4. Claim 1 is objected to because of the following informalities:
Line 5, "the air-gasoline mixture" lacks of antecedent basis.

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Line 7, "the exhaust gas" lacks of antecedent basis.

Line 8, "the air intake phase", and "the pressure" lack of antecedent basis.

Lines 9-10; "the air-gasoline-recirculated exhaust gas mixture" and "the combustion speed" lack of antecedent basis. Appropriate correction is required.

Claim Suggestions

5. Applicant(s) is suggested to revise the claimed limitation:

Claim 1, line 5, "ignition means" should be changed to --means for igniting-- for consistent with the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, and 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Bourguignon et al ("FR 2 830 570" or "US 6,907,856 B2").

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

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inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Re claim 1, Bourguignon discloses an engine with spark ignition and direct fuel injection having a cylinder (1), a cylinder head (2), piston (3), combustion chamber (4), fuel injector (5) for injecting fuel into the combustion chamber (4), spark plug (6) produce a spark in combustion chamber (4), the pressure of the gasoline flow provided to the injector (5) by pump (8) exceeds 300 bars (note that meaning the pressure provided to the injector is above 250 bars). Also note col. 2, line 1 through col. 3, line 33; and specification, which describes to homogenize the air fuel mixture, and the combustion speed.

Re claim 5, Bourguignon discloses the injector and the spark plug are separated by a distance between 5 and 30 millimeters (col. 3, lines 19-21).

Re claim 6, Bourguignon discloses the injector and the spark plug are disposed in the cylinder head according to two respective axes forming an angle above 35 degrees (Fig. 1, and col. 3, lines 22-27).

Re claim 7, Bourguignon discloses the injector injects fuel during the compression phase of the engine cycle (col. 3, lines 4-9).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, and 8-9 are rejected under 35 U.S.C. 103(a) as being obvious over Bourguignon.

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The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Re claims 2, 9, Bourguignon et al disclosed the claimed invention except for the values of residual ratio above 20% and between 40-60%. However, Bourguignon disclose the engine with spark ignition and direct fuel injection, which include the quantity of fuel introduced into cylinder (col. 1, lines 32-50), and mix the air/fuel mixture at the time of combustion triggering (col. 2, lines 38-52). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Bourguignon, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges or values involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

Re claim 8, Bourguignon et al disclosed the claimed invention as applied above, but does not mention the system working in the intake phase, but rather mention the two intake

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valves are moved by a camshaft, or controlled directly, in such a way as to place combustion chamber in communication with intake manifold at a chosen instant preceding compression. It would have been obvious to one of ordinary skill in the art to have mention the system including intake phase (which applicant is placed on official notice that it is well known in the art to modify the system with intake phase). The applicant(s) does not describe any function of the intake phase that would differentiate it from what it is already known. It would have been obvious to one of ordinary skill in the art to have these techniques in Bourguignon to aid in the system.

9. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being obvious over Bourguignon in view of Faletti et al (US 6,439,210 B1). Bourguignon discloses claimed invention except for the portion of recirculated exhaust gas is reintroduced into the combustion engine by a so-call "external" route (EGR), via a derivation; and "internal" route (IGR) by appropriate control of the intake valves and exhaust valves. Faletti teaches that it is know to have the portion of recirculated exhaust gas is reintroduced into the combustion engine by a so-call "external" route (EGR), via a derivation; and "internal" route (IGR) by appropriate control of the intake valves and exhaust valves (abstract, col. 1, lines 20-63, and col. 4, line 52 through col. 6, line 27). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Bourguignon by providing the functions for reintroduce the recirculated exhaust gas into combustion chamber as taught by Faletti in order to improve the combustion efficiency of the engine.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The reference has been cited as art of interest to show other method for using the high pressure for the injection.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johnny H. Hoang whose telephone number is (571) 272-4843.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen K. Cronin can be reached on (571) 272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JHH
September 20, 2007

Johnny H. Hoang
Examiner
Art Unit 3747